SEYMOUR SMITH

Handbook OF PRACTICAL PRUNING

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SEYMOUR SMITH

HANDBOOK

OF

Practical Pruning

by

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(B. S. A. Cornell)

Horticultural Editor, THE AMERICAN HOME
Editor, The New Garden Encyclopedia

THIS book, by a competent, nationally known horticultural authority, will help you to get more and better fruit and flowers through correct pruning.

To prune correctly is not difficult. You will do it easily and rapidly after absorbing the simple, fundamental principles in this book. These, together with efficient Seymour Smith pruning tools and gardening shears, obtainable at most hardware and seed stores, are all you need to make pruning enjoyable, healthful and profitable.

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Leading Pruning Tool and Garden Shear Manufacturer

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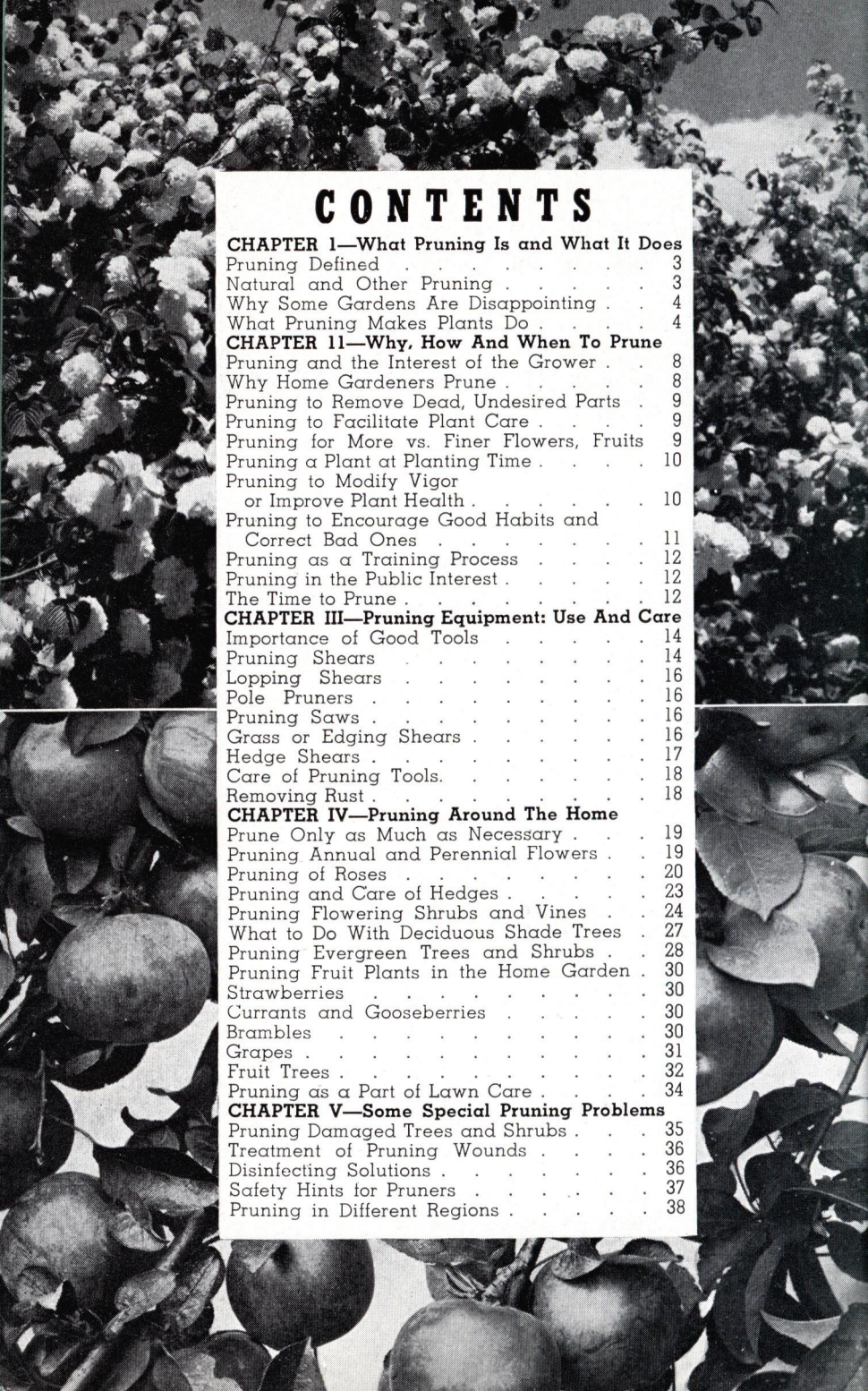

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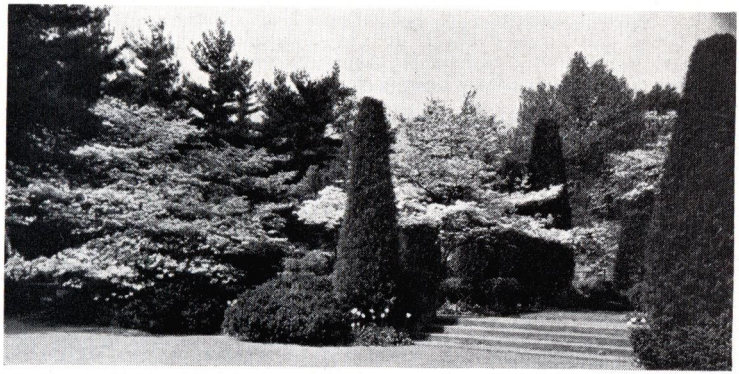


CHAPTER I

WHAT PRUNING IS AND WHAT IT DOES

PRUNING is the removal of any part of a growing plant.

That definition sounds simple enough, doesn't it? But it calls for some explanation. In the first place, there are two main types of pruning. The first type "just happens" as an episode in the natural life and growth of a plant. Twigs and branches may get too little light or become crowded or otherwise lose out in the struggle for survival, die and fall to the ground; or they may be broken off by high winds or overloads of snow and ice. Shoots may be browsed by cattle or deer; insects may gnaw and girdle them or devour the foliage. Small, immature fruits, in excess of what a plant can properly support and ripen, may be shed in the course of what orchardists call the "June drop." All these are examples of what might be called natural pruning. Depending on how it comes about, it may or may not damage the plants or endanger their healthy growth; but it certainly cannot be called intentional or planned. And it is not the kind of pruning with which this book is concerned.

The second type of pruning is that which is done by the grower or gardener, and it, in turn, is of two kinds: First, there is the pruning that he does deliberately, with certain results in mind, his purpose being to bring the pruned plants into line with what he wants them to be; second, there is the pruning that he does in the course of his regular cultural activities, even though he may not think of it as such. We read and talk about the pruning of roses, grape vines, berry bushes, fruit and ornamental trees, shrubs and the like, which is done to make them more beautiful or more useful, more effective as elements in a garden or landscape picture or more efficient as sources of valuable products to be consumed or sold. But we are likely to forget that we are also performing a pruning operation when we mow a lawn, shear a hedge, thin fruit on an overloaded bough (thereby supplementing the natural process mentioned above), remove faded flower clusters from a lilac bush, pinch the side shoots from a tomato plant that we want to train to a single stem, or disbud a chrysanthe-

mum in order to produce an exhibition bloom. Many of us, perhaps, do more of this "unintentional" pruning than of the other kind, and it, too, may be beneficial or harmful, depending on how it is done. Hence the importance of knowing how to do it right.

Now the different kinds of plants vary widely in their habits of growth. They respond differently to the effects of climate, weather, soil conditions, moisture supply and other factors. And different kinds of pruning operations are required to make them develop along certain lines under different conditions. All those reasons combine to make it impossible to present a single, concise set of pruning directions to cover all cases. Yet the average person who plants (or has planted for him) a few shade trees, roses and other ornamentals, or a small orchard or vineyard, is inclined to be disappointed because he cannot find a few, brief, explicit instructions telling just how and how much and when to prune each of his plants. He doesn't realize that such instructions would have to vary from season to season and from year to year to meet the changing requirements not only of the different kinds of plants but also of the individual specimens. And because the idea of reading up on some basic principles—what he thinks of as "technical, theoretical stuff"—doesn't appeal to him, he decides that pruning is probably too difficult a subject for him and that if the man who comes once a week to clean up the grounds can't look after it, well, he'll just let it go. All of which explains why so many pleasant homes become smothered by overgrown foundation plantings, why hedges grow thin, lanky and ugly, why roses get out of hand and fail to bloom as they should, why, in short, so many gardens disappoint rather than satisfy and delight their owners.

Well, that's too bad. And it isn't necessary. Pruning isn't so difficult to understand or to do. There's nothing mysterious or secret about it. Not if you start out by learning how it works. As Dr. Liberty Hyde Bailey wrote, nearly fifty years ago, "Principles must come first if practice is to be satisfactory. The details are to be worked out on the plant itself after the operator has learned why." . . . So we are going to look at some of the whys of pruning and then go on to the hows. First, then, the general, basic principles or, we might say, the things that pruning does to plants or causes them to do.

Pruning and Its Effects on Plants

1. **Severe pruning of the top—that is the branches—of a plant tends to induce increased growth of stem and leaves.** Thus it serves to stimulate or rejuvenate a plant which, although the surrounding circumstances, such as food and water supply, temperature and sunlight, are favorable, is making weak, unsatisfactory growth. However, it cannot, nor can any kind of pruning, change the character of a plant and make a naturally weak-growing kind into a strong-growing sort, cure a diseased condition, or heal an injury.

2. **Severe pruning of the roots, on the other hand, causes reduced growth of the vegetative parts, that is, leaves, shoots and branches.** This is easy to understand when it is remembered that a plant gets the moisture that constitutes more than three quarters of its weight (and in which much of its essential food material is dissolved) from the soil, through its roots. By reducing a plant's feeding roots, we simply cut down its ability to take in food and water, just as if we

took one of two soup spoons away from a hungry man with a bowl of consommé before him. (And yet, it is sometimes necessary for the good of a plant to do just that!)

3. **Pruning does not change a plant's natural habit.** A tree or shrub of characteristic form may be pruned to another shape; but if it is left alone, it will in time revert to its original form and mode of growth. For example, if the leader or topmost shoot of a spruce is cut away, the tree will not cease its upward growth. Gradually, one of the radiating side branches that grow from the main stem at the base of the lost tip will grow faster than the others, straighten up little by little, and in time replace the lost leader. This natural replacement effort can be hastened if, as soon as the strongest, most promising side shoot is identified, it is gently bent upward and tied in that position to a stake or splint bound to the stem; under this gentle pressure it will more rapidly become upright and dominant over the others. See Fig. 1.

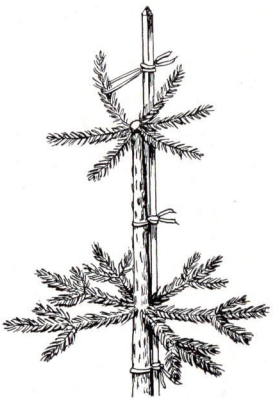


Fig. 1—Spruce Tip Tied to Stake to Hasten Its Natural Upward Growth.

4. **Different parts of a plant may grow at different speeds as the result of one part taking more food and moisture than the other.** The accelerated growth of the new leader just referred to is an illustration of a desirable application of this principle. Sometimes, however, the precocious growth of a certain shoot or branch might unbalance or distort the form of a plant, in which case pruning might have to be resorted to to restore and maintain the desired symmetry.

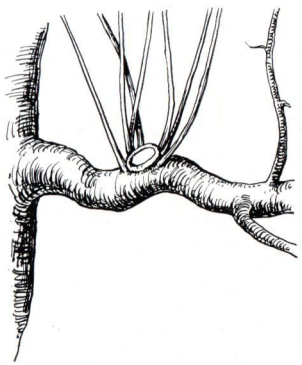


Fig. 2—"Water Sprouts"; Unnatural, Soft and Usually Sterile Shoots. Result of Severe Top Pruning.

5. **A plant may exhibit different habits at different ages or stages of its growth; it may, therefore, require one kind of pruning when young and a quite different procedure when it is older.** As an illustration, it is usually necessary to do quite a little pruning of a young fruit tree to develop a correct shape; subsequently, the less pruning that can be done to keep it developing properly, the better.

6. **Severe top pruning, especially of a dormant plant or one just starting into growth, causes the production of many soft, vigorous shoots called "water sprouts."** They are an indication of a disturbed equilibrium between the branch and root systems. As they rarely develop into flower- or fruit-bearing wood, and often appear at points where branches are not wanted, they are of no use and merely necessitate more pruning later. It is desirable, therefore, to prevent their occurrence and one way to do this is to attend to moderate pruning whenever it is called for and not put it off until a heavy job is unavoidable. See Fig. 2.

7. **Plants (especially when young) tend to grow fastest from their highest buds, that is, those nearest the ends of vertical or nearly vertical shoots.** This can be taken advantage of when tall, upright growth is wanted. Otherwise, the tendency can be, to some extent, controlled by checking the flow of the food-bearing sap in such shoots. This is done by twisting or bending them downward, by "ringing" (removing a narrow ring of bark), or by "heading-in" the shoot, that is, pinching or cutting it back. If done over the top of a tree, shrub or hedge, this heading-back thickens and broadens the growth. It also has the effect of making a shy-bearing plant develop more flower (and fruit) buds and relatively fewer vegetative buds.

8. **The interruption of the flow of sap in a shoot, if done just above a bud, results in that bud making increased vegetative growth; if, however, the sap flow is interfered with just below the bud, it tends to remain short, increase in thickness and become a flower- or fruit-spur rather than a branch.** The reason is that the sap flowing upwards from the roots carries raw food that is suitable for building new stem and leaf tissue, whereas the sap moving downward from the leaves contains elaborated food which is richer in carbohydrates and other substances needed for the production of flowers, fruits and seeds.

9. **The fruit-bearing tendency or habit in plants varies with the variety and the individual and to some extent with the soil and other environmental conditions; it can be modified but slightly, if at all, by pruning.** Thus if an apple tree is neglected during its early years and permitted to overbear for two or three seasons, it is likely to acquire the habit of bearing only in alternate years, or at longer intervals, so as to rest between crops. Had it been restrained by judicious pruning and allowed to bear only moderate crops from the first, it would probably have developed the more desirable habit of bearing moderately every year.

10. **Pruning, if done to modify or control the size of a plant, its form or its rate of growth, becomes a method or part of the practice of "training" it.** Its results must be judged on that basis regardless of any other effects. Lilac bushes, for example, can by regular pruning be "trained" to form a handsome hedge; but they cannot be expected to bear blossoms at the same time. The thinning out of young fruit or of fruit spurs on a branch is one way to improve the size and quality of the resulting fruit and of equalizing the tree's production over a period of years; but it also results in a somewhat reduced yield in any one year.

11. **Heading-in, or light pruning of the top, acts exactly opposite to severe pruning; that is, it checks excessive growth and induces the development of side shoots and flower (fruit) buds.** At the same time, it tends to restrict the size of the head (and the total leaf surface) and to concentrate the flower- and fruit-bearing area, so its ultimate effect may be to lessen rather than increase a plant's aggregate, lifetime yield.

12. **Climate, soil fertility, topography and all such environmental factors play a part in determining the need for pruning and influence its effects.** A plant growing in a New Jersey garden needs different management than one of the same variety growing in Minnesota, Oklahoma or California even though it may be equally adapted to the different conditions in those places. Similarly, a cherry tree in the

midst of a commercial or even a home orchard calls for different handling than one of the same kind growing alone in the middle of a lawn as a source of shade as well as fruit.

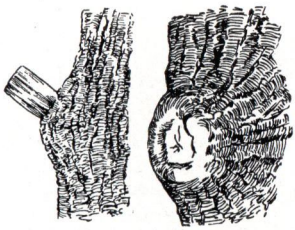


Fig. 3—Limb Cut Too Far Out Cannot Heal Over, but When Correctly Cut It Heals Rapidly and Completely.

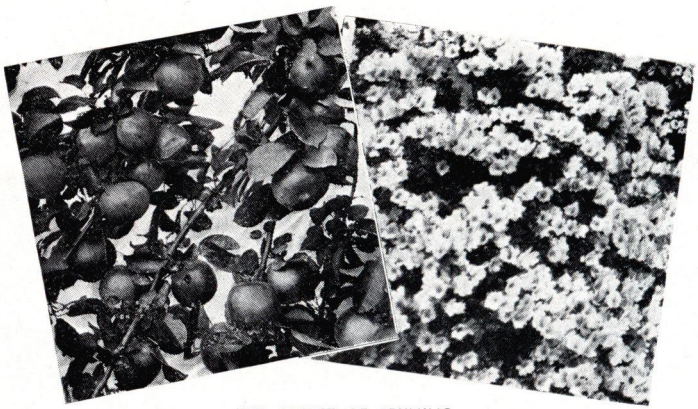
13. **The after-effects of wounds caused by pruning depend upon the speed and completeness with which they heal.** The healing of a wound is influenced by such factors as its position, its size, its shape, the manner and the season in which it is made, and the kind, health and vigor of the plant. The painting of pruning wounds (See Chapter V) is of more value as a means of preventing invasion by insects and disease-causing organisms than as a means of hastening the healing process. See Fig. 3.

14. **Pruning is a combination of science and art and should be done with a clear picture in mind of the result sought and with a realization of the probable effect of any particular operation or technique.** Whether pruning shall be done to prolong the life and health of a plant or to produce some temporary effect, such as increased size, heavier yield, unusual form or special decorative beauty, should be decided after carefully considering the value and rarity of the plant and its all-round contribution to its surroundings.

CHAPTER II

WHY, HOW AND WHEN TO PRUNE

WHY, how, and when we prune our plants depends largely upon our interests and purposes in growing them. A nurseryman, for instance, is primarily concerned with the production and development of a supply of young plants of good size and vigor, attractive in appearance, and which can be dug, sold and delivered with the best chance of giving satisfaction and stimulating more sales. His pruning is largely a matter of shaping these plants so as to give them sales appeal. A large scale fruit grower wants, first, to bring his plants to proper size and shape so that they can be most efficiently cared for, in the shortest possible time while maintaining their health and vigor; and, second, to bring them into bearing as soon as possible and to secure profitable crops from them for as long a period as possible. He therefore prunes both for form and for the right balance of framework and of bearing wood. The arborist (tree expert), shade tree commissioner, or park superintendent has the task of keeping the plants under his care in the best of health, of preventing or correcting the results of injuries, and of removing any threats to the public safety, as from dead or broken limbs, etc.



THE OBJECT OF PRUNING
Increased Beauty and Production

Gardeners—including both professionals who have charge of private estates and amateurs who enjoy the privilege of caring for their own home grounds—have more of a personal interest in their plants and direct their pruning operations toward the production and maintenance of pleasing effects which may be produced by individual specimens, mass effects, background plantings or vistas. They strive for blossom beauty, for pleasing or useful plant structure, for generous yields of fruits, nuts or other products. They, perhaps more than any other class of plant growers, seek to develop plants according to certain patterns or forms so as to fit them into definite, planned effects. And they prune to keep them healthy and long lived as well as interesting and beautiful.

Whatever your ultimate objective in pruning, the principles on which it should be based and the reason for any particular system or operation will be the same. Having outlined these principles in Chapter I, we now take up the various reasons for pruning the plants in our gardens.

1. **We prune to remove dead wood or any part that is incurably diseased, insect ridden or otherwise undesirable and superfluous.** Dead limbs in trees are unsightly and may do damage if they fall; even a dead stub or a dead branch on a bush or small plant offers an opportunity for insects and rot organisms to enter. This sort of pruning can be done, as the old gardener's advice says, "when the knife is sharp"—which means at any time. So can the removal of the less desirable of two interfering branches which, by constantly rubbing together, develop bark wounds and potential points of infection. Similarly remove seed pods which may merely disfigure a handsome lilac or other shrub, or steal food and strength that might better go into the building of more useful stems, foliage or flowers (as in rhubarb or annual ornamentals). Nothing is gained by putting off this work, and if a shoot is discovered starting where it will in time crowd or unbalance or disfigure a plant, it is better to pinch or cut it off right away than to allow it to grow and use up energy. Follow this principle in removing the side shoots from tomatoes or any sort of herbaceous plant that is being trained to one or a few stems.

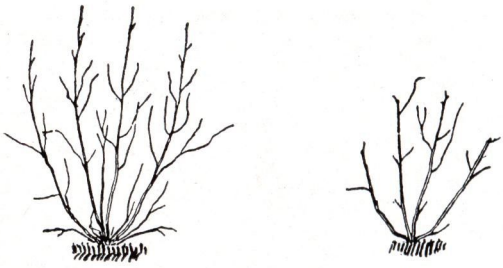
In removing dead wood, cut the branch back flush with the living branch or trunk from which it arises; this is especially important in taking out parts badly infested with scale or borers or attacked by an infectious disease like fire-blight. If it is not necessary to remove the entire branch, make the cut just beyond but close to a bud; and here, as always in heading back shoots, see that this bud is on the side toward which you want the new branch to grow.

In removing canes of raspberry and blackberry after they have fruited, old canes of rambler roses, decrepit, useless branches of forsythia, mockorange and other shrubs, cut all the way back to the ground, taking care, however, not to injure the young, renewal growth.

2. **We prune to facilitate the care of plants—their cultivation, spraying, harvesting, etc.** However, it is usually desirable to set plants farther apart when planting, to use dwarf or other special types, or to stake or otherwise train them, than to attempt to restrain them by severe pruning, which once started, has to be kept up indefinitely. In growing strawberries, one person may prefer to remove all the runners as fast as they appear so as to keep the original plants separate and direct all their vigor into the production of a moderate number of top size, top quality fruits; another grower may save himself that trouble by letting the runners spread, root, and form a thick, "matted row" from which he will get larger crops of smaller berries. Similarly, one grape vine may be planted to cover an arbor or trellis, in which case it is pruned little if at all, whereas in a vineyard, each vine is carefully controlled so that its canes are kept of such number and length as will bear a certain number of bunches of the most marketable size.

3. **We can prune either to secure larger, finer flowers or fruit in limited amounts, or to secure larger crops of products that are individually smaller or of lower quality.** The management of the strawberry bed just mentioned is an example; others are the thinning of young apples, peaches and other fruits; the "stopping" of tomato, melon, cucumber and other plants when enough fruits have set or blossoms developed;

the disbudding of many kinds of flowering plants, especially when grown under the controlled conditions of a greenhouse. Another way to induce finer flower effects in some plants is by severe cutting back at the end of the flowering season, as is done with bush hydrangeas, buddleias, the rose-of-sharon, Hybrid Tea roses, etc.



Before. After.

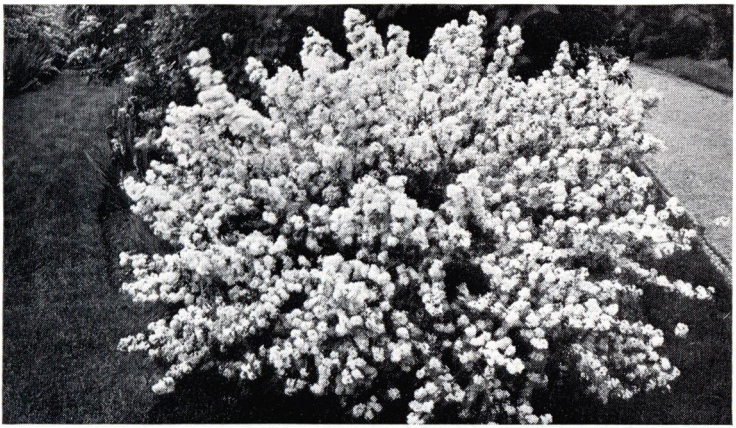
Fig. 4—Shrub Pruning at Planting.

4. **When planting a tree, shrub, rose bush, etc., whether newly bought or merely transplanted, we first prune the root system enough to remove broken or ragged ends (unless it is completely surrounded by a mass of soil); then we prune the top just enough to keep it in balance with the reduced root system.** If the latter were not done, the moisture given off by the top as it started into growth would probably exceed the capacity of the roots to supply it while they were establishing themselves. See Fig. 4. However, the greater this reciprocal cutting-back, the greater its dwarfing effect and its shock to the plant; hence the aim should be to handle the plant with the least possible injury to the feeding roots, which means the minimum disturbance of the whole root ball.

The first shaping of a fruit tree (see paragraph 6 below, and Chapter IV) is a different matter, done to establish a well-shaped, strong framework of main limbs. The fact that it may involve considerable reduction of the top does not mean that the roots should be severely pruned to correspond. However, extra care will be needed to keep down water sprouts and prevent too dense a head.

5. **We prune to modify the vigor of a plant, to stimulate increased growth and size, or heavier production of blossoms and fruit; and to help it recover from the effects of unfavorable weather, insufficient food or unusually severe insect injury.** For example, favorable conditions sometimes result in such a heavy crop of fruit that the plant is weakened and requires this sort of stimulation before attempting to produce another crop. Severe winters in northern regions frequently kill back sections of hedge—even of such a hardy subject as privet. If the roots are uninjured (as is usually the case) the best treatment is to cut the plants right down to the ground so they will make an entire new growth. The resulting forest of new shoots will have to be headed back once or twice the first season, but ordinarily in a few years it will catch up with the rest of the hedge and fill the gap. Where Japanese beetles are abundant, it is a common practice to cut roses back severely as soon as the beetle injury becomes severe; the resulting new growth, after a short rest period, is usually late enough to escape.

If, as indicated in Chapter 1, a plant tends to run to wood and foliage instead of flowering, a corrective is a heading-back of the most vigorous branches toward the close of the summer growth period; it is often desirable to combine this with an application of fertilizer strong in phosphorous, and sometimes a mild root-pruning will also help, especially in the case of wisterias that are reluctant to bloom. Even



an old or neglected shrub that has gotten out of bounds and become cluttered up with bare, woody stems can be brought back into shape and desirable limits by the complete removal of much of the older growth and the judicious heading back of the largest of the younger branches. But it is best to spread this sort of rejuvenation treatment over two or three years, rather than to perform one major operation.

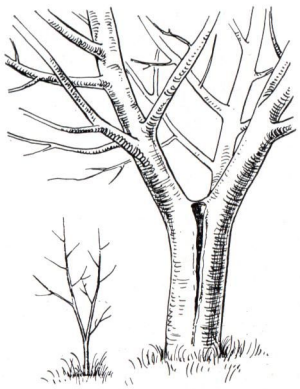


Fig. 5—Split Crotch. Could Have Been Prevented by Checking or Removing One of the Branches.

6. **We prune to give a young plant a basic structure on which it can develop a form of usefulness and beauty, to foster and encourage desirable habits and tendencies, and to correct bad habits before they result in weakness or deformity.** If two branches start from about the same point and one is not checked or removed, a crotch results which, in time, is likely to split and ruin the tree. If garden chrysanthemums are not pinched back as often as the shoots become five or six inches long, the plants become tall, spindly and bare at the base. If a tree or shrub planted close to a house has a natural shape that especially fits it to that particular place, any pruning should be carefully done to assist and promote that development. However, as has been pointed out, pruning cannot be expected to completely change or even modify to any great extent natural, well established growth habits of a species, variety or individual.

7. **We prune to supplement mechanical training which aims to create special plant forms for special effects or purposes.** To form a rose arch, we select suitable leaders, guide and tie them where they are wanted, and restrain or remove subordinate shoots. In topiary work, or the "sculpturing" of all kinds of figures in living boxwood, privet, etc., the meticulous shearing is carried on long after the plants have been given their basic shape around a foundation of some sort. Sometimes the pruning is designed simply to produce abundant, thick growth, as in a windbreak or a planting of willows grown for baskettry, or dogwood or viburnums grown for their colorful stems. The growing of peaches or other fruits in espaliers against walls combines several objectives — the creating of pleasing geometrical designs, the protection of the plants against cold and heavy winds, and the production of especially large, fine fruits.

8. **We prune, sometimes, with the interests of the community or of society in mind.** An illustration is the clearing of a way through tree tops for the passage of telephone, telegraph and power wires. Properly done, this can solve a problem without injuring or defacing the trees; but often it is resorted to to correct the poor placing of poles or wires, or the planting of badly chosen kinds of trees in a place where wires are already present. The routine pruning of street and park trees by municipal employes is done to prevent the injury of citizens by the chance falling of dead or weakened branches. Although not the direct responsibility of home owners, these activities can definitely affect the beauty of neighborhoods and communities, so it is a phase of good citizenship to see that they are intelligently and conscientiously looked after by responsible officials. And, of course, each home owner has the responsibility of keeping watch of his own trees wherever they overhang adjoining property or the public highway.

The Time To Prune

There are different "best times" for doing different kinds of pruning, just as there are various good reasons for doing them. Referring to shade trees, A. Robert Thompson of the National Park Service, says: "Practical considerations necessitate pruning operations at almost any or all seasons of the year, although it is well to avoid pruning maples, birches and other 'bleeders' during the early spring season when the buds are breaking, even though the actual damage done by 'bleeding' at this time is negligible. The principal damage is done to the feelings of onlookers who see in the sap loss a resemblance to human bleeding which, of course, is an unture comparison."

A Cornell University Bulletin on the planting and care of "Ornamental Trees for New York State" says: "Tests in northeastern United States with trees have shown that wounds heal much quicker when they are made between February 1 and May 1 than at any other time during the year." Farmers' Bulletin 1870 of the U. S. Department of Agriculture on "Pruning Hardy Fruit Plants" points out that, "Twenty to twenty-five years ago it was frequently recommended that some pruning be done in the summer. However, experimental results have indicated that summer pruning tends to be even more of a dwarfing process than winter pruning, and in recent years summer pruning both of young and bearing trees has largely been discontinued. At the present time, dormant season pruning is practiced almost exclusively in American orchards."

Nevertheless, an Iowa Agricultural Experiment Station publication, reflecting the prevailing opinion in that region, says: "The most satis-

factory time to prune young, non-bearing fruit trees is during the latter part of the dormant season — in February or March after low winter temperatures are unlikely. . . . Old bearing trees may be pruned anytime in late winter or from June 15 to August 1. Thin wood pruning is much easier to perform when the fruit is on the tree, since the pruner who is unacquainted with thin wood can see at a glance which wood is bearing inferior fruit."

Thus the time of pruning is definitely a matter about which precise, overall statements cannot be made. Details regarding it in relation to different kinds of plants are discussed in Chapter IV.

CHAPTER III

PRUNING EQUIPMENT: ITS USE AND CARE

PRUNING is a sort of surgery and, like any other kind, should be done so as to accomplish the desired result with the least possible shock and injury to the patient. An unnecessarily large wound is more easily invaded by disease-causing organisms; a ragged cut heals more slowly than a clean, smooth-edged one; a long branch stub will never heal over; pruning (that is, mowing) a lawn with a dull machine is likely to tear and pull up the grass plants by the roots instead of trimming them off evenly and cleanly. Those are all poor practices.

To do the right kind of pruning you must have (a) a knowledge of how to do it, and (b) proper tools of good quality. The gardener's selection and handling of his pruning implements is a measure of his skill as a worker. Wise selection of pruning tools is good economy, too. I happen still to be using a pair of pruning shears that I selected and bought forty-five years ago, with the help and advice of my horticultural instructor who had learned the value of quality and was passing the knowledge along to me.

Similarly, good tools deserve good treatment and care. Pruning shears and knives are made for cutting wood and should not be used for opening tin cans, prying up box lids, cutting wire, etc. On the other hand, kitchen knives, hatchets, hoes and household scissors are **not** pruning implements, will not give satisfactory service if used for such work and are almost certain to do unnecessary injury to the plants. True, you "root prune" a tree or vine with a spade; but that means cutting some of the feeding roots by thrusting the blade straight down into the ground, which is more digging than pruning! As a rule there is a particular tool that is best fitted for each kind of pruning; the use of any other implement, as a makeshift, with a view to saving time or avoiding a trip back to the tool shed, is usually inefficient and disappointing.

Kinds of Pruning Tools

Pruning shears. This is by far the commonest type of pruning implement and the most useful around the home grounds. Many professional gardeners insist that nothing equals a special pruning knife with a heavy, broad, hooked blade, and, in expert hands, such a tool will undoubtedly do an excellent job. However, that preference is largely due to early training and much practice according to old-time methods, before pruning shears had been brought to their present state of lightness, strength, convenience and efficiency.

Shears are made in different sizes and with variations in such details as the spring mechanism, the method of locking the handles together when not in use, etc., but they are all of two main types. In one, a sharpened, convex blade cuts, scissorswise, across a thick, concave, non-cutting jaw; in the other, a thin, straight-edged blade cuts squarely down upon a flat bed or "anvil" of softer metal. Either style should be used with the sharp cutting blade close against the parent branch or, if a shoot is being shortened rather than removed, with the sharp blade toward its base. The cut should be made from the under or outer side of the branch, as it would be if a knife were used. In

HAND PRUNING SHEARS—(A) "Snap-Cut" anvil type. (B) Scissor type, pressed steel handles. (C) Scissor type, forged steel throughout. (D) Scissor type, malleable iron handles, tempered steel blade.

LOPPING SHEARS—(E) "Snap-Cut" anvil type. (F) Scissor type. (G) Double scissor type, forged steel handles.

POLE PRUNERS—(H) Pole either sectional as shown or solid. (I) Heavy duty head for mounting on any pole. (J) Pole saw head for mounting on any pole.

PRUNING SAWS—(K) Narrow blade general purpose. (L) Wide blade for large limbs. (M) Heavy steel frame, thin, hack-saw type blade.

HEDGE SHEARS—(N) "Multipower" compound lever action. (O) Simple lever action.

GRASS SHEARS—(P) Malleable iron handles, steel blades, improved scissor action. (Q) Pressed steel with vertical handles and horizontal blades. (R) Same as "Q" except has handle extension for operating from standing position.

cutting a large twig or tough wood, bend the branch upward and inward so as to stretch the wood fibres on the side where the blade enters; it will sever them more easily and, as they spring apart, pass through the wood more smoothly. Needless to say, pruning shears should be kept sharp, free from rust, well oiled and with the handle-nut tightened sufficiently to keep the handles from wobbling but not tight enough to make them bind. Frequent use of a small whet-stone or oil-stone is advisable and if the blade becomes nicked, it should be honed or ground promptly before the nick becomes larger.

Weaknesses often found in cheap, low grade tools and which, of course, should be avoided, include poor quality material that may bend or break under normal strains; unreliable locking devices that permit the handles to work loose and perhaps fall apart, and poorly designed handles that pinch and bruise the fleshy part of the hand when the shears are used. A useful modification of the regulation shears is a lightweight model with an accessory spring grip that holds the twig or stem after it is cut. This is especially handy for cutting roses and other flowers as it keeps them from falling to the ground and leaves one of the operator's hands free to hold the branches apart, etc.

Lopping shears. These are heavyweight pruning shears with powerful jaws mounted at the end of a pair of long handles which, operated with two hands, permit great pressure to be exerted. In one style, a lever or compound action still further increases the cutting force. This tool is used on heavier branches than regular shears can handle, as in cutting down hedges and thickets, land clearing and the dehorning of old fruit trees. It acts in the same way as the smaller shears, but special care should be taken in placing the jaws so they will not bruise the bark of the main branch or leave an undesirably long stub.

Pole pruners. In these the cutting device — usually a round-edged, pivoted knife — is mounted at the end of a rod (single or jointed) which may be as much as 12 ft. long. The knife is operated by a lever connected by means of a wire to a pivoted handle at the base of the pole, or by a cord held in the operator's hand. Near the knife is a small hook used to retrieve cut twigs that get caught in the branches, and for hanging the tool up when not in use. In some models, a small, curved saw can be attached to the end of the pole alongside the knife for cutting larger limbs than the knife can manage. Pole pruners are designed for, and mostly used by, professional tree men, but they are very handy for trimming tall climbing roses, clipping faded blossoms from large shrubs and doing other such jobs from the ground rather than from a ladder.

Pruning saws. For the removal of large limbs, any good, sharp, cross-cut saw will serve, but it is preferable to use one especially designed for pruning, with considerable taper to its slim blade so it will not bind in small openings and injure the bark of adjoining branches. Such a saw may consist of a solid blade or be of open-back design, like a meat- or hack-saw; it may be straight or slightly curved. Saws with teeth on both sides should be avoided; unless used with great care and where there is plenty of room, they are almost certain to damage other branches than that being cut.

Grass or edging shears. These work on the principle of a pair of scissors, but they may be of several designs. The original style was almost identical with the tool used for shearing sheep, its two blades being the sharpened ends of a single piece of steel curved to form

a spring handle which held them apart against the pressure exerted by the operator. A later development was virtually a pair of strong, long-bladed scissors with a spring to pull or push the blades apart after each cut; a further improvement was the offsetting of the handles so the shears could be operated without having the knuckles scrape the ground at each stroke. A still later style secured the same effect by setting the handles at right angles to the plane of the blades so they can be compressed vertically with an easy, squeezing motion. This last mentioned type is also made with a pair of small wheels supporting the blades and a long handle through which runs a rod that enables the blade mechanism to be operated by a gripping device at the upper end of the handle. With this device, grass along beds and paths and at the base of trees can be trimmed without having to bend over or squat down. There is a distinct advantage in using grass shears instead of trying to trim the edges of a lawn by pushing the lawn mower along on one wheel; the single wheel has to do all the driving of the blades, and the machine is likely to wobble and cut into the turf, disfiguring it and dulling the blades of the mower.

Other implements for cutting tall grass and weeds include the familiar sickle or grass-hook and a gadget consisting of a narrow, double-edged blade mounted horizontally at the end of a long shaft which is swung back and forth like a golf club. Unless expertly used, neither of these will give the smooth, even results obtainable with edging shears.

Hedge shears. This tool is a large, long-handled pair of grass shears or scissors, to be operated with both hands, for cutting soft, young twigs and foliage, not for pruning woody stems. Some types have a sharpened notch at the base of the blades with which branches up to half an inch or so can be cut; in another style, the cutting edge of one or both of the blades is serrated to prevent slipping and facilitate clean shearing; still another development is a lever or compound construction which gives increased speed and power. In the better quality tools of this type, the weight is carefully balanced so they are less tiring to use; another thing to look for is a strong connection between blade and handle and a tight fitting ferule to hold them together.

Caring for Pruning Tools

Like any kind of cutting tool, pruning implements should be kept clean, sharp and in perfect adjustment so they will do better work with less effort and with the least injury to the plants worked on. Always wipe them clean and dry at night or when work is interrupted; keep all working parts oiled and keep a keen edge on the blade or blades with a whet-stone or hone. If a blade is nicked have it ground to a proper edge without delay; all good pruning shears have blades that can be replaced when worn down by continuous use and frequent grinding. The filing and setting of saws can be learned and done by any handy man, but until you are able to do it right, have your pruning saw put in shape by an expert at least once a year.

Don't leave sharp tools lying around. They will soon rust — and they may injure someone. Have a safe place for each one (including a rack or stand for the pole pruner that will keep it from warping or bending). Some gardeners keep the wooden parts of their pruning equipment varnished or treated with linseed oil to preserve them; others paint the handles of small tools a bright color which makes it easier to find them if left about and easier to identify and recover them if borrowed and not returned. During the non-use season keep metal parts smeared with oil or grease. Prevent rusting if possible, but if it occurs, it can be removed with emery cloth, pumice stone, or sand and oil. The following method of removing rust from spades, hoes and other garden tools, as recommended by the United States Golf Association Green Section, would be useful for salvaging pruning implements that have been neglected or mislaid:

Make a paste of 1 part glycerine, 2 parts each of axalic and phosphoric acids, and 5 parts silica. Smear a coating on the rusted surface and leave in a warm place for 20 minutes. Wash off, dry metal thoroughly and apply a coat of grease or heavy oil to prevent further rusting.

CHAPTER IV

PRACTICAL PRUNING AROUND THE HOME

THE care of every home garden involves some pruning of one sort or another. Properly done, it enhances the appearance of the place as a whole besides promoting the health and welfare of the individual plants. If it is neglected, or wrongly done (whether through ignorance or carelessness), the results are soon apparent and detract from the value of the property as well as from its looks.

Except for the occasional treatment of large trees, home garden pruning can be attended to by the owner. All it calls for is a knowledge of the principles and practices, a little study of the problems presented by the different plants, the purchase of a few good tools and, now and then, a little work that is interesting and not too arduous. The results are a more attractive home for the family to enjoy, a saving of what it would cost to have the work done by hired help (if available), the physical benefit of the outdoor work, and the satisfaction of a good job well done. A good policy to follow at all times is to do only what pruning is clearly necessary. It does not follow that, because a little pruning is beneficial, a lot will be even better.

A — Pruning Annual and Perennial Flowers

Garden flowers are pruned more than most people realize. As soon as annuals grown for mass effects are well started in the spring, they should be pinched or snipped back to induce bushiness and maximum flower production. The same with hardy chrysanthemums and other fall-flowering perennials that are wanted as dense, bushy plants covered with bloom. In a few small beds this pinching can be done with the fingers; for large scale work, a pair of grass shears is a real time saver.

As the season advances, we prune whenever we pick flowers for bouquets or house decoration. Always cut rather than break or tear the stems, both because it makes for longer lasting blooms and because, on the plant, clean cuts heal more quickly than ragged ones and offer less opportunity for diseases to enter. Cut blossoms with relation to other buds and shoots on the same stem; as has been noted, pruning to just above a bud stimulates it to increased growth. While some foliage is usually wanted to complement the blossoms, leave as many leaves as possible to carry on the work of manufacturing food for the plant. Even though all the blossoms are not needed, they should be picked as soon as they fade, especially from annuals. Once an annual ripens seed, its life work is finished and it has no incentive to keep on flowering; in perennials, the formation of seed takes food and energy that might better be stored up for future growth. Some kinds, like delphiniums, will send up a second crop of flower stalks if the first is cut back to the crown as soon as the blossoms fade. Low-growing things like alyssum, border pinks, forget-me-not, etc. tend to become straggly and unkempt unless sheared back.

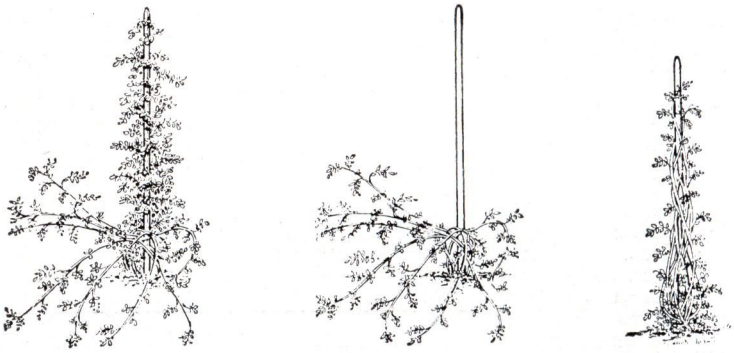
Extra large, choice blossoms are obtained by disbudding, that is, nipping out all subordinate side buds so as to throw the strength of the stem or plant into the terminal bud. This is a common practice

in greenhouse management and in growing flowers for exhibition, but by doing it with some of his dahlias, peonies and other large-flowered garden plants, the average gardener can get a thrill and excite the admiration and envy of his neighbors.

After midsummer, we dig and divide iris clumps and other perennials; for this work it is well to keep a strong pair of shears that you don't mind using on root masses in which soil and pebbles are embedded. Some instructions say to separate clumps of phlox, peony, rhubarb and other strong growers with a spade, but sharp pruning shears do just as good a job and a much neater one. Finally comes the fall clean up, when annuals and perennials are cut back to the ground, the tops being added to the compost head. Speaking of compost heads, better and quicker results are obtainable if all vegetable refuse is chopped up or shredded before being composted. A pair of old hedge shears is handy for doing this.

Though often thought to be difficult and complicated, this actually is not if the nature and requirements of the main types of roses are kept in mind and the proper kind of pruning is performed on each at the right time. Rose catalogues and reference books list rose varieties by classes and usually note them as strong- or weak-growing, etc. Know the names and class requirements of your plants and prune them accordingly.

B — Pruning of Roses



Before Pruning | After Pruning | After Tying Up.

Fig. 7—Pruning the Small Flowered Climbers.

One group, consisting of three types, needs very little regular pruning. Here we have the shrub or species roses, such as R. hugonis, R. rugosa, etc. and various hybrids; the trailing wichuraiana or "Memorial rose" sorts often used to cover steep banks and stone walls; and the large-flowered climbers of Tea and Hybrid Tea parentage such as American Pillar, Doubloons, Dr. W. Van Fleet, Mermaid, New Dawn, Climbing American Beauty and others. With these, simply cut out any dead wood and remove or head back branches that are injured or that make inconveniently rampant growth. This can be done at any time, but it is usually practiced just after the first, early summer blooming. Don't overdo it. One of the finest varieties of this class — Golden Climber — flowers best at the extremities of the ma-

ture growth; people who well-meaningly cut their plants back every year thinking to force them into bloom are thus actually defeating their own ends.

A second group consists of the climbers with smaller flowers in clusters, the Ramblers and their relations, including Dorothy Perkins, Hiawatha, Excelsa, Lady Godiva, Aviateur Bleriot and others. They give one spring burst of abundant bloom and brilliant color, bearing most profusely on one-year-old wood. As soon as the blossoms fade, therefore, cut back to the ground the branches that bore them and gather up and tie to the trellis or other support the young canes that have been developing and which will flower the next year. See Fig. 7.

Fig. 8—Tea, Hybrid Tea and Perpetual Roses Spring-Pruned to Force Strong Blossoms.

The third and largest group includes the bush or bedding roses — the Teas, Hybrid Teas, Hybrid Perpetuals, and the Floribundas and others of polyantha or cluster-flowered lineage. As they are grown for flower effect rather than size and foliage or plant effect, we throw their strength into blossoms by, each spring, cutting the plants back to three or four of the strongest main stems and these to 6 in. or less, that is, three to five strong buds, from which will grow the new wood on which the season's blossoms are borne. See Fig. 8. A good plan is to partially head back the plants in late fall, about the time when they are hilled up or mulched, so as to prevent winter winds from whipping and breaking the long canes. Then, in spring, when danger from freezing is over and the mulch is removed, the final pruning is done. The severity of this spring pruning will depend on the variety and the individual plant according to this seemingly anomalous rule: Roses of weak, straggly growth should be cut back more severely than those of tall, vigorous habit; but a weak plant of a naturally strong variety should be pruned lightly (as if it were a strong-grower) while a vigorous specimen of a weak variety should be trimmed severely. For detailed directions on protecting roses over winter, consult the many good books on rose culture, or the American Rose Society at Harrisburg, Pa.

In all pruning make the cut just above a bud that points in the direction in which new growth is desired, and at a rather abrupt angle as shown in (a) in the illustration. A cut made as at (b) exposes an unnecessary amount of wound tissue, as at (c) leaves too long a stub, and as at (d) is too close to the bud which would probably die. See Fig. 9.

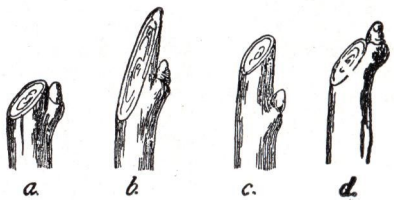


Fig. 9—Cutting in Relation to Buds.

A single rose should be cut carefully so as to preserve the shape of the plant and stimulate future flowering. In the accompanying illustration, (1) indicates the point where the stem should be cleanly severed, just above the second leaf joint. The result will be that the buds located in the axils of those leaves will each send out a shoot which will bear another rose, as seen in the second sketch. These blooms can be cut in the same way, and so on as long as the season and the vigor of the plant permit. If the first rose were cut with a short stem (at 2), the competition of the shoots from the several buds left along the stem would result in smaller secondary blooms and perhaps only weak foliage growth. Thus roses supply an excellent demonstration of the facts that severe pruning induces strong growth, and that carefully located pruning stimulates flower production. See Fig. 10.

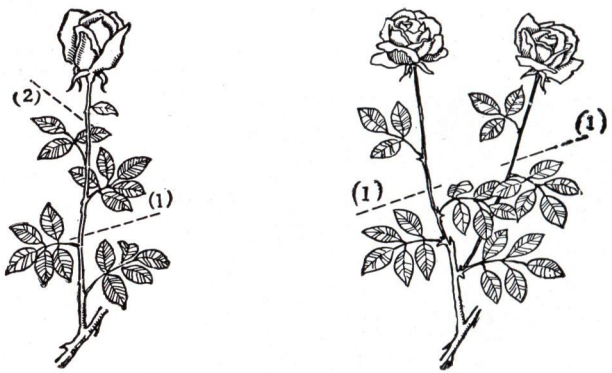
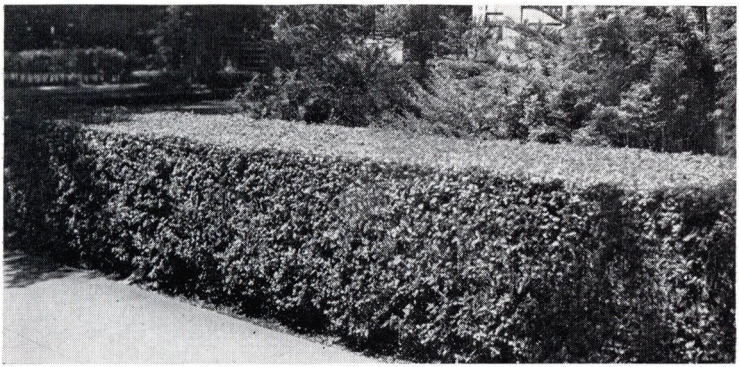


Fig. 10—How to Cut Roses.

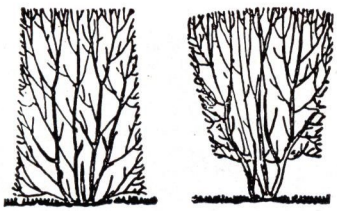
Because pruning is so important a phase of rose culture, it is all the more necessary that it be done with good shears kept in good condition and razor sharp. If any plants are suspected of having canker or crown gall, all tools used on them should be disinfected as directed in Chapter V before they are used on other stock of any kind.



C — The Pruning and Care of Hedges

There are two kinds of hedges. The first is made by growing shrubs or trees close together in a row but allowing them to retain their individual form, character and beauty. The other kind is formal, a part of a definite design, and the plants, set closer and severely trimmed, are merely identical units, like bricks in a wall or palings in a fence. The first, or hedgerow, type (which many people consider the more beautiful) calls for only enough pruning to keep the plants healthy and vigorous and to restrain them when they interfere with passers-by or grow so large that they obstruct a favorite view.

To make a formal hedge or "wall of green," select plants that take kindly to persistent shearing such as privet, yew, boxwood and barberry (which can also be grown in the natural manner if desired). As soon as they are planted, quite close together and usually in two staggered rows, cut them back to about half their average height (say 6 to 12 in.). When the new growth from the side buds is about a foot long, cut it back again about one-half; this may be done the same season or delayed until just before growth starts the following spring, depending on the locality, soil and other growing conditions. Each pruning makes the hedge grow thicker and broader and by the second or third season it is usually large and dense enough to be given its permanent outline and dimensions. Thereafter, two seasonal shearings are usually sufficient, the first as soon as growth is well started in spring (just before blossoming in the case of privet), and the second about midsummer. Pruning later than that, especially if there is much rain, is likely to stimulate growth that would go into winter unripened and probably be killed. Whatever shape is decided on, take care to keep the base wider than the top so that the lower branches can get plenty of light, retain their foliage and not get thin, bare and straggly.



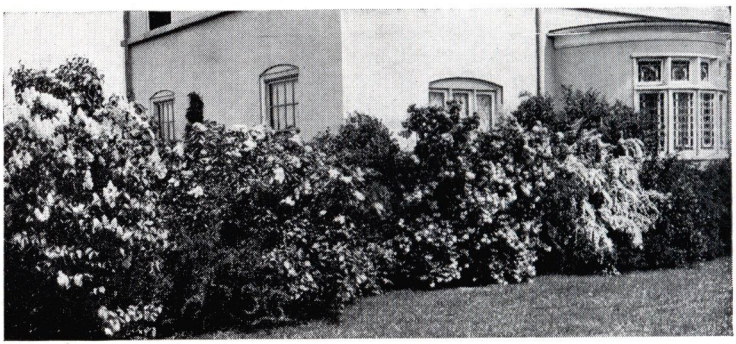
Right. Wrong.

Fig. 11—Keep Base of Hedge Bush Wider at the Bottom.

While hedge trimming can be done freehand, the use of a measuring stick and a guide line — or, better, two lines, one on each side of the top — gives a much neater job. For any hedge above waist high, a stepladder or a wide plank or two placed on sturdy boxes or horses is a great help in keeping the hedge faces straight and in preventing excessive arm strain. Hedges trimmed in fancy outlines are less popular than formerly, perhaps because of the labor and time they demand. However, any of the small-leaved, quick-growing hedge plants can be sheared into various architectural forms with posts, battlements, cupolas, arches and other features. A hedge, like any planting, requires generous feeding and a good supply of moisture. A top-dressing of well-rotted manure in late fall is both food and winter protection. One thing **not** to do (though often seen on suburban plots) is to mound the soil up around the stems of the plants in an attempt to make it "look neat." This induces a fine growth of roots in the mounded up soil in the spring while it is moist; later, when hot weather occurs and water is scarce, they dry out and may die.

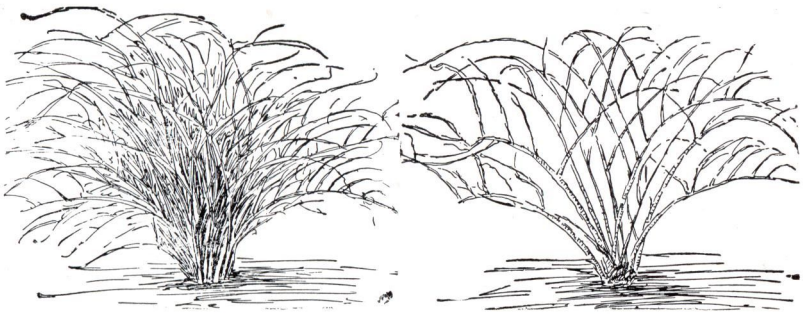
D — Pruning Flowering Shrubs and Vines

Flowering shrubs also fall into two main classes (see lists A and B). The first includes those whose flowers develop in spring or early summer from buds formed the previous summer, and on which any pruning should be done as soon as the flowers fade. Any wood removed during the fall or winter, that is, after the flower buds had formed, would naturally take them with it. If, for any reason, winter pruning should be necessary, the pruned branches can be taken indoors, put in water and forced into bloom **provided** they have been subjected to freezing temperatures while on the plant. Twigs removed earlier than this will remain dormant even under the most favorable growing conditions.



Shrubs of the second class flower in mid- or late-summer on wood produced that same season. They, too, may be pruned right after the blossoms fall, but pruning is usually delayed until the dormant period, preferably just before spring growth starts, when the extent of any winter injury can be determined. Shrubs that bear fruits valued either for their decorative effect or as food for birds should, of course, be left untouched as long as any berries remain to be enjoyed.

The foregoing are the simple basic rules, but a useful reminder is, in general, to prune shrubs **as little as possible.** Like most plants, they are most graceful and pleasing if allowed to take their natural, untrammeled shapes. If winter injury necessitates removal of part of a



Before. After.

Fig. 12—Proper Way to Prune Shrubs.

plant, or if long neglect has left a jungle of stems that calls for a major thinning-out, it is best to prune the oldest and poorest branches right back to the ground and shorten the others to reasonable lengths. See Figs. 12 and 14. Don't on any account trim all the lower branches and the young shoots coming up around the base of the plant; and never practice the "barber shop haircut" type of pruning, that is, the rounding off of a shrub until it has the outline of a mushroom or igloo. this makes an unnatural, grotesque thing of it, reduces its flowering area, and creates an effect that can be corrected only by demolishing the top and starting all over again. See Figs. 13 and 14.

Since the purpose of woody vines is usually to drape, clothe or screen objects, it is rarely desirable to prune them. As always, dead wood should be cut out at any time and precocious shoots should be kept within bounds. Other than this, the less the shears are used, the

Fig. 13—Examples of Bad Shrub Pruning.

better, with one exception. Wisterias are often slow and reluctant to flower. Sometimes this is an inherent fault of the individual and cannot be overcome. Often, however, a rather severe heading back of the side shoots in midsummer or early autumn, supplemented by judicious root-pruning, will stimulate the formation of flowering buds that will provide a wealth of color the following spring.

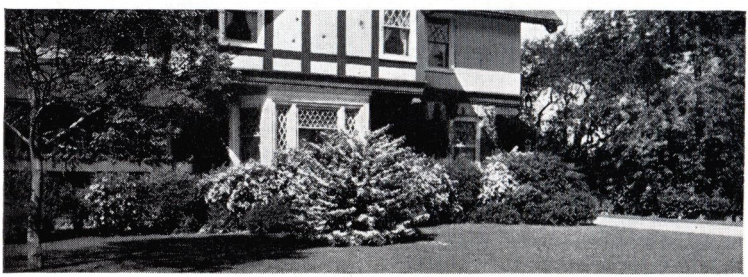
List A — Spring-blooming shrubs that should be pruned promptly after flowering.

Amelanchier (Shadblow)
Azalea
Benzoin (Spicebush)
Calycanthus (Sweetshrub)
Caragana (Siberian pea-tree)
Cercis (Redbud)
Chionanthus (Fringetree)
Chaenomoles (Flowering-quince)
Daphne (Garland-flower)
Deutzia
Exochorda (Pearlbush)
Forsythia (Goldenbell)
Kalmia (Mountain-laurel)
Lonicera (Bush honeysuckle)
Magnolia
Philadelphus (Mockorange)
Pieris (Andromeda)
Potentilla (Cinquefoil)
Prunus (Flowering Almond, Cherry, Plum
Rhododendron (see Evergreens)
Ribes (Flowering Currants)
Spiraea (Spring blooming varieties)
Syringa (Lilac)
Tamarix (Early flowering sorts)
Viburnum carlesi, V. lantana

Fig. 14—Pruning of Shrubs.

List B — Summer-blooming shrubs that can be pruned between late summer and early spring.

Abelia (Arbutus-shrub)
Acanthopanax (Five-leaved aralia)
Amorpha (Indigo-bush)
Baccharis (Groundsel shrub)
Buddleia (Butterfly-bush)
Callicarpa (Beautyberry)
Caryopteris (Bluebeard)
Clethra (Sweet pepper-bush)
Hamamelis (Witch-hazel)
Hibiscus (Rose-of-Sharon)
Hydrangea (except H. Opuloides)
Hypericum (St. Johnswort)
Indigofera (Indigo)
Kerria
Lagerstroemia (Crapemyrtle)
Lespedeza (Bushclover)
Ligustrum (Privet)
Rhus (Sumac)
Salix (Willow)
Spiraea (Those that flower after June)
Staphylea (Bladdernut)
Stephanandra
Tamarix (Late-flowering kinds)
Vitex (Chaste-tree)



E — What to Do With Deciduous Shade Trees

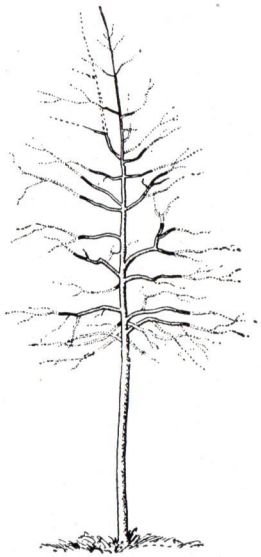
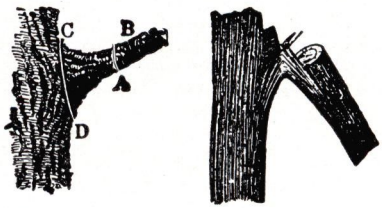


Fig. 15—Proper Pruning of Shade Tree at Planting.

In no plant is a natural, uninterfered-with form more beautiful and desirable than in shade trees, whether for lawn, street or park planting. Prune them, therefore, as little as possible, except in the case of the round-headed Catalpa bungei sometimes seen in dooryards and along paths. Since its umbrella-like top is hardly a natural form, and since much of its soft, succulent growth would probably be killed back over winter, the usual rule does not hold and the practice is to cut the top back each fall to a mere knob covered with very short stubs, even though the winter aspect is anything but attractive.

In planting a young shade tree, shape its top sufficiently to give it a strong leader and a framework of well placed branches starting at the right height for the location. See Fig. 15 and paragraph 4, page 10. (It may be well to say that, contrary to an impression sometimes held, branches remain at the height at which they first appear; they do not move up with the growth of the stem which elongates only at its apex.) As the tree grows, the occasional removal of the smaller, less valuable of two crossing or interfering branches, or of any that are broken or injured, may be called for. And, of course, any limbs that die or that prove inconvenient or dangerous should be cut out. A low branch that would not be undesirable on a lawn might be a menace growing over a sidewalk or drive; and a branch might grow so far as to rub against the house

or obstruct a vista more valuable than that part of the tree. Such conditions are usually corrected by removing the entire limb back to the main trunk, preferably between late fall and early spring unless there is reason for emergency action.



Right. Wrong.

Fig. 16—How to Prune Large Branches.

The pruning of large branches from mature trees is best left to professional tree men, but if you should have to tackle such a job, follow this procedure: (1) Throw a strong rope over a higher limb and tie it to the branch to be removed, so as to support it while it is being cut off and lower it to the ground afterward. (2) Make an undercut (A) 6 in. or more from the trunk (the larger the limb the farther out) half way through the branch, or until the saw binds. (3) Make a second cut (B) downward, a few inches farther out on the limb, all the way through unless the branch cracks and breaks off first, as it probably will. (4) After the limb has been lowered to the ground, make a third cut (CD) flush against the trunk so as to leave no stub; however, make the wound no larger than necessary. (5) If the cut surface is more than 3 in. across, it is well to paint it with a protective dressing (see Chapter V). The above routine prevents the breaking of the limb and the tearing of the bark as shown in the second picture.

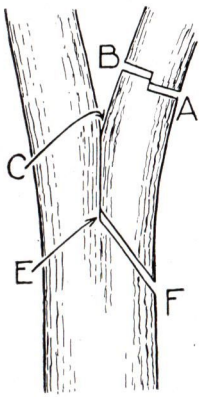


Fig. 17—Proper Treatment of "V" Crotch.

Sometimes a tree develops a V-crotch which offers a place for moisture, fungous spores and insects to lodge and which is almost sure to split open in time. As soon as this potential crotch is discovered, cut off the smaller, weaker limb taking the same precautions as above outlined and again making three cuts if the size of the limb warrants—A, B, and F-to-E (**not** E-to-F) as shown in Fig. 17.

F — Pruning Evergreen Trees and Shrubs

Here again the best advice is: Don't do it unless you have to and then only as much as is absolutely necessary. Much of the beauty of conifers. such as firs and spruces lies in their symmetrical, pyramidal form and, in evergreens, new growth is rarely produced from mature wood. Thus the removal of a sizeable branch usually leaves a gaping hole that can never be filled up. If a young, vigorous evergreen tends to become unbalanced, the branches that are making excessive growth can be held back, and also made thicker, by a careful cutting back of their tips to the extent of one or two year's growth. Small evergreens in foundation plantings can similarly be kept dense and at the proper height by pinching or shearing the end buds just as the new growth starts in spring. However, a better way to avoid the overgrown foundation plantings that so often crowd doorways and

block up windows and porches is by carefully selecting slow-growing species in the first place instead of the cheaper spruce, fir and pine species that are actually forest trees. The softer-foliaged evergreens, such as yews, arborvitaes, junipers and retinosporas, are better adapted to shearing than are the stiff-needled sorts; they can be clipped to a smooth surface and various forms with sharp hedge shears or even grass shears or a sickle just as the spring growth appears and, if a very neat appearance is desired, again in early summer. However, the practice of shearing specimen evergreens into cones, globes, exclamation points and the like, to serve as accents around and in front of suburban homes, can be — and has been — sadly overdone.

Low-growing forms of juniper, cotoneaster, etc. gain much from their sprawling irregularity. If they start to intrude on a path or lawn, head back the unruly branches by cutting even into the two or three year old wood, just in front of a lusty side shoot. Broad-leaved evergreens, such as rhododendrons, azaleas, mountain-laurel, mahonia, etc., grow so slowly that they rarely need pruning for years after be-

ing planted. If gradually they begin to obstruct windows or views, spartan action is justified. Select the tallest and most domineering branches and cut them back to strong side branches well below the desired level; but do this to only one or two at any given place in any one year. In other words, spread the heading back over several seasons so as to give the young growth a chance to spread, thicken and prevent the unpleasantly undressed appearance of a general deheading. Naturally, this means sacrificing some bloom for the first few years.

REMINDER: Clean all pruning tools well after working on evergreen trees; otherwise the sticky gum that adheres to them will prove a nuisance when next they are used for other pruning.

G — Pruning Fruit Plants in the Home Garden

Fig. 18—Trimming of Strawberries Before Setting Out.

So much has been written about the pruning of fruits, and so many different methods have been advocated from time to time, that many people have gotten the idea that it is too difficult and complicated subject for them to attempt. Actually, if the basic objectives are kept in mind — namely, healthy, vigorous growth; plants of good sturdy form and convenient size, and consistent, moderately heavy yields — and if the necessary attention is given at the right times, the work is no harder than any other garden activity, and the results are generously worth while. In discussing the methods employed on the different kinds of fruit plants, we will progress from the smallest, most temporary up to the tree crops.

Strawberries. When planting, trim back the plants slightly, both top and roots. See Fig. 18. Remove the first blossoms that appear (a) after the mid-summer planting of spring-fruiting varieties, and (b) after the spring planting of the so-called ever-bearing sorts. For quality fruit, cut all runners off before they have a chance to root; for larger yields of smaller berries, let some of the runners take root so as to develop a "matted row" one to two feet wide. Once such a row is established, however, you cannot go back to single plant cultivation; usually a bed becomes so crowded and unproductive after two or three crops have been harvested that it is plowed under and replaced by a new planting made in the meantime.

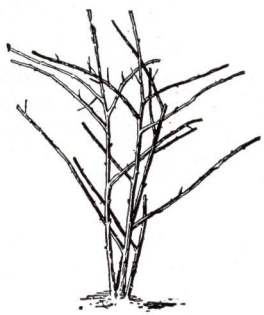


Fig. 19—A Well Pruned Blackberry or Black Raspberry.

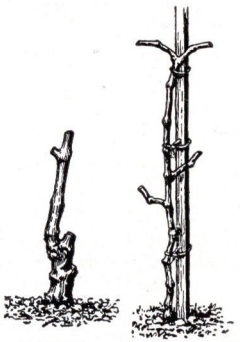
Currants, gooseberries. These fruit best on canes two or three years old. Early each spring, cut down, to the ground, all canes that have borne more than two crops, any broken ones, and all small, spindly, unpromising new shoots.

Brambles. Blackberries, raspberries, dewberries and their numerous hybrids require, in general, three or four operations, as follows: (1) In early spring, before growth starts, thin out the canes that have developed but not yet borne to what each plant can support — usually four to six of the strongest; (2) in early summer, head back these canes (of all kinds except red raspberries) to a convenient height, say 2 to 3 ft. to stimulate the growth of lateral branches on which the next year's crop will be borne; (3) the following spring (same time as 1) head back the laterals of blackberry, and black-cap and purple-cap raspberry, and also both the main canes and the laterals of the red raspberries which were not pruned at all the previous summer; (4) after the fruit has been harvested, cut out all canes that have

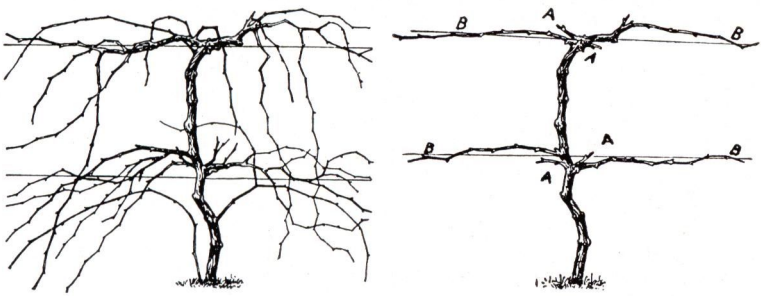
borne and burn them to prevent the possible spread of disease. Some growers leave this last step until winter, but nothing is gained thereby. See Fig. 19.

The above program, which constitutes a "constant renewal" system, is based on the fact that the brambles bear on canes which grew the previous year and which, after bearing, are useless. The bush kinds are usually left unsupported or, at most, kept off the ground by means of one or two horizontal wires; the trailing sorts — dewberries, loganberries, youngberries, etc. — are managed in essentially the same way but are tied to upright stakes or along wires stretched between stout posts.

Grapes. The old dooryard system was to let the plants grow over an arbor or any convenient trellis and gratefully gather the annual harvest. In the modern home garden where there is likely to be less room and more chance of damage by insects and diseases, it is usually better to prune systematically more or less as the commercial vineyardist does. There are several approved systems of grape pruning, all of them based on the fact that **the fruit is borne in clusters near the base of the current season's shoots which have arisen from wood that grew the year before.** The two aims in pruning grapes are, then: (1) To maintain an annual supply of one-year-old wood from which fruit-bearing shoots will develop; and (2) to see that there are not enough of such shoots and fruit clusters allowed to mature than the plant can support without unduly weakening itself. Probably the best method for the home gardener to follow is the Kniffen renewal system. The best way to learn it is by watching an experienced grower handle his vines over a few seasons. However, it is clearly explained in the following extracts from Bulletin 421 of the New York (Cornell) Agricultural Extension Service on "Growing Fruit for the Home":



At Planting. 3rd Year.
Fig. 20—Training the Young Grape Vine.



Before. After.
Fig. 21—The Kniffen System of Pruning and Training Grape Vines.

"At planting time the vine is cut to 2 buds and the shoots which arise are tied to a stake. At the end of the first season, the best of these canes is again cut to two buds. At the end of the second season the

strongest and straightest of the canes is saved to form the trunk of the vine. It is cut back to 5 ft. in height and tied to the stake. See Fig. 20. At the end of the third season, therefore, there will be many canes arising along this trunk and training to a definite system will begin." The system then described—one of several employed in this country—is the Kniffen which, the Bulletin says, is "as well, if not better, adapted to home garden use than are others. The trellis has two wires (usually No. 9 or 10 size) one 2½ or 3 ft. and the other 5 ft. from the ground. . . . At the end of the third season . . . the cane left to form the trunk should reach the top wire, if it did not before. At that height it is cut off and tied in an upright position to the two wires. All growth is cut away except two canes originating at each wire. These are cut back—the two at the top wire to 5 buds each and the two at the bottom wire to four buds each. The ultimate form of the vine [a T with two cross bars] is now established . . . Future pruning . . . will be much the same as that outlined for the end of the third season except that 4 spurs of two buds each are left for the purpose of renewal. From these buds come the canes which will be tied up at the end of the fifth season, leaving 30 or so buds and 4 renewal spurs to each vine, and cutting off all other growth. Each succeeding year, 4 canes are put up and 4 are spurred for renewal in the same manner . . . The best time to prune is in the early spring, after winter killing is over and before the sap begins to flow." See Fig. 21.

Fruit trees. The pruning done to fruit trees may include all or some of the following operations: Trimming of roots and preliminary shaping of top at time of planting; see Fig. 22; also paragraph 6, page 11 and paragraph 4, page 10; second and third year pruning to determine shape of head and to prevent development of crotches or other undesirable features; gentle guidance during youthful growth; in bearing trees, heading back, opening up to light and air, and thinning of fruit as may be necessary; rejuvenation or old or neglected trees if still sound and vigorous. While this is another large subject, it can be covered briefly by quoting from the same Cornell Bulletin (one of many such publications that could be referred to):

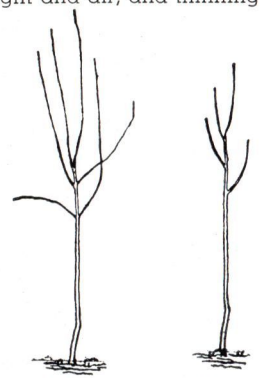


Fig. 22—Pruning the Apple Tree at Planting.

"Pruning is best done during the dormant period . . . Summer pruning, except for the removal of water sprouts, tends to weaken the trees. Comparatively little pruning is necessary or desirable in young fruit trees.

. . . The little that is necessary, however, should most certainly not be neglected.

. . . The first year the height of the head should be established by cutting off the branches that grow lower down on the trunk than desired . . . The remainder of the scaffold limbs may be retained, if well distributed, but not more than two should be left which arise near any one point on the trunk, because of the danger of crowding and splitting later on. Except on cherry and peach trees, these side limbs should be cut back from one-third to one-half at planting time . . .

"After fruit trees are well in bearing, more pruning will be desirable as the trees grow older to keep them within bounds and the branches well balanced in vigor . . . The kind of pruning needed at this time will be, largely, cutting back to lateral branches in the top and thinning out . . . With peaches, the cutting back is often carried into two- or three-year-old, or even older, wood. . . .

"In the second and in following years, attention should be directed toward the removal of vigorous growth which tends to crowd, compete with or injure what are to be the main scaffold limbs of the tree. . . .

"For cherry trees it seems best to thin out the scaffold limbs where necessary, but not to cut them back unless the basal buds on the branches are in good condition. The yearling peach tree is generally cut to a whip about 3 ft. high at planting time, or, if the side branches are very well developed, they may be cut back to 2 or 3 buds.

"The Japanese plums are handled much like the peach, while other plums and cherries will need to be pruned more nearly like the apple. Most pear trees can be handled like the apple but less pruning is desirable because of the danger of blight."

The treatment of fruits that grow continuously (oranges, for example) varies with the locality as well as the variety. The following are standard suggestions from the writings of E. J. Wickson, one of the early citrus fruit authorities: "The best form of tree is a low-headed, compact growth. It is secured by trimming the young plant, at transplanting, to a straight shoot of 4 to 6 ft. in height, and tying it to a stake to give it support and straightness. All shoots from above the bud are permitted to grow to shade the trunk and to stiffen it, though a too strong lateral must be pinched . . . The lower branches will bear the first fruit and as the tree attains age they will stop growing and can be removed. Thus the head of the tree is raised gradually and

space is given for the drooping of the higher branches. In the top of the tree, too, the rule for pruning should be to remove the weaker branches which seem to have outlived their usefulness, and thus give more room for the vigorous ones . . ."

H — Pruning as a Part of Lawn Care

A new lawn should not be pruned — that is, mowed — until the grass is 2½ to 3 in. tall, about where the mower, when set at its highest adjustment, will just trim it evenly. Thereafter, go over it often enough to keep the grass at that height; frequent mowing will prevent the clippings from becoming long and abundant enough to smother the young growth. Unless hot, sultry weather causes them to mould and become unsightly, they should be left to settle down into the grass and gradually add to the supply of organic matter in the soil. Rake the lawn only when necessary to remove twigs, stones and, in fall, tree leaves which, if allowed to remain, tend to mat down and kill the grass. Regular cutting, watering during severe droughts, feeding in spring and late summer and top-dressing with humus in late winter or early spring will keep a lawn so vigorous and thick that weeds will have a hard time invading it.

The trimming of lawn edges is often neglected or done in a hit-or miss way by running the lawn mower along them while trying to balance it on one wheel. It is hard to do a neat job this way; the mower blades are likely to be nicked by the edge of the sidewalk, flagstones, etc. or dulled by cutting into the sod; flowers at the edge of the border are likely to be injured, and the base of trees and shrubs is likely to be bruised. All these disadvantages can be avoided by the use of edging shears. Properly used, they can develop graceful rounded turf edges along beds and borders instead of the sharp, raw edges left by spades, hoes or turf-cutters. Shearing is also more satisfactory than mowing where the lawn is edged with strips of wood or metal, bricks, boulders, or ribbons of low, evergreen ground covers. As in using a lawn mower, don't cut too close with grass shears, and learn to keep them parallel with the ground so as not to gouge into the sod. Carry a whetstone with you whenever you use a pair of grass shears or a sickle and keep the cutting edges in fine condition. It will enable you to do better work with less effort and much more pleasure.

CHAPTER V

SOME SPECIAL PRUNING PROBLEMS

Pruning Damaged Trees and Shrubs

PRUNING is one of several measures employed in treating and rehabilitating damaged plants. Others, which do not come within the scope of this book, are bracing and cabling limbs, filling cavities, and special feeding to increase vigor and hasten recovery. Sometimes two or more of these measures are taken simultaneously to supplement one another. The amount of effort and expense justified in any instance depends upon the kind and value of the plant, the possibility of replacing it and what cost, and the nature and extent of the injury. The saving of an historical oak or other tree, a beautiful evergreen in a key position, or a rare specimen of exotic shrub might warrant considerable expenditure for expert, professional service, whereas, if a shrub or two or a strip of hedge is broken by an ice storm, crushed by a falling limb or damaged by thoughtless vandals, it may be more sensible to simply dig out the plants and replace them, or cut them back to the ground and let them make a new head as suggested in Chapter IV D.

In most cases, tree repair work should be left to expert professional tree men. However, one operation that anyone can perform and that might be the saving of a tree is the removal of girdling roots, which are sometimes the result of careless planting. See Fig. 23. If a small root becomes wrapped around the trunk at or just below ground level and is overlooked, as it and the tree grow, it will gradually tighten around the trunk and in time may actually strangle it and cause the death of the plant. Even though such a root is below ground, its presence can often be detected by the absence of the usual buttressing or flare of the trunk on that side. The simple remedy is to carefully expose the root and cut through it in several places with saw or chisel, taking care not to injure that part of the tree around which it is wrapped. If possible, remove the fragments; if they are already partly embedded they can be left there. The tree, now able to develop normally, will gradually grow around and over them.

Fig. 23—Dangerous "Girdling Roots" That Result Form Careless Planting.

Fig. 24—For Best Results, Trim Wounds to a Tapered or Oval Shape.

If a limb has been broken off or carelessly pruned so as to leave a ragged scar and torn bark, the injured area should be cleaned up and smoothed with knife or chisel and the margin of the wound cut back cleanly to sound bark. See Fig. 24. Such a surface wound should

always be given a tapering oval or streamlined shape with the longer dimension up and down the tree; this causes the least interruption of the flow of sap and thus facilitates healing.

Most deciduous shrubs and vines are quick to recover if all damaged branches are cut back to sound wood or to the ground. However, severe pruning of evergreens that have been bent and twisted by heavy loads of snow should not be done until the plants show clearly that they are unable to straighten up after the weight is removed and repair the damage themselves. Temporary bracing may help, and if a branch is cracked but not actually broken, it is sometimes possible to hold it with splints bound with strips of cloth or soft rope until it is normally strong again.

The Treatment of Pruning Wounds

The sound bark of a healthy tree is the best insurance against attack by insect pests or diseases; that is why trees should be protected against the gnawing of horses, cattle or mice, inadvertent "barking" by lawnmowers, wheelbarrows, automobiles, etc., the hacking of initials in smooth trunks, and other intentional or unintentional injury. While the natural tendency of any plant when wounded is to heal or cover the wound with scar tissue, this is a slow process. A wave of this protective (callus) tissue grows from the edges of the wound and gradually spreads inward across it until it merges in the center and, in time, becomes covered with bark like the rest of the tree. But while this is taking place, there is good opportunity for pests and decay organisms to enter the unprotected wood, especially when it is wet. That is why large pruning wounds should be covered, as soon as possible after they are made, with something that will, so far as possible (1) Keep out the moisture which favors decay; (2) disinfect the exposed surface on the chance that fungi or bacteria are already there; (3) exclude them until the wound has healed over, and (4) accelerate the healing process. This subject has been extensively investigated but authorities do not agree in recommending any one wound dressing as wholly satisfactory and efficient. Some of the materials favorably mentioned are:

Ordinary linseed-oil-and-lead house paint, which can be colored to blend with the bark and renewed once or twice a year if it tends to crack or scale; this is probably the most convenient material for the average home gardener to use.

Orange shellac, melted wax or grafting wax, all of which are good for covering small cuts and as temporary dressings; on large surfaces they will have to be renewed frequently or they can be covered with some more durable material.

Bordeaux paint, made by mixing bordeaux powder (a fungicide) and linseed oil to the consistency of thick cream; it is antiseptic and lasts well, and its rather unpleasant bluish color can be overcome by the addition of a little lampblack.

Asphalt paints, which seem fairly satisfactory and relatively harmless to the cambium or growth cells around the edge of the wound from which the callus originates; they are sometimes made more effective by the admixture of disinfectants.

Safety Hints for Pruners

In addition to the precautions that should be taken by any workers with edged tools, there are some special suggestions that persons who undertake pruning work should keep in mind:

1. In working with roses and brambles, wear heavy gloves as a protection against thorns which cause painful wounds which may become serious if infected.

2. Watch out for poison ivy when pruning hedgerows and thickets.

3. Be careful in using poisonous disinfectants; keep hands away from mouth and eyes; wash them well after work, especially before eating.

4. When working on a ladder, even a step ladder, make sure it is sound, strong enough to support you and firmly set on level ground before mounting it.

5. Don't work in trees when they are wet and slippery.

6. Wear overalls or other clothing that will protect the body, arms and legs but is not bulky and will not catch on thorns and branches. A close-fitting cap is more suitable for working in trees and among bushes than a board-brimmed hat.

7. If it is necessary to climb into a tree, test every limb before putting your full weight on it; always distribute your weight as much as possible. In general, leave high tree work to experts; if you must attempt it, use a safety rope to guard against falls.

8. Don't carry a saw or other tool in your hand while climbing a tree; attach it to your belt, or tie a light line to it and haul it up when you are ready to use it. **Never throw anything from a tree** without making sure that there is no one below; even then, shout a warning.

Always Employ Tree Experts for the Big, Difficult Jobs.

Pruning in Different Regions

The principles of pruning apply everywhere, but details of practice may vary according to locality, climate, exposure, etc. For this reason, apply to your State Agricultural Experiment Station or County Agricultural Agent for bulletins and other information regarding methods that are recommended for your particular section. As an example, according to the Iowa State Bulletin mentioned in Chapter IV, in the Middle West winter sunscald is common on the southwest side of apple and cherry trees unless something is done to protect the trunks. In pruning such trees, therefore, leave enough branches on that side to provide a screen of foliage and twigs; otherwise the trunk may have

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to be whitewashed, wrapped in paper or otherwise shaded against the winter sunlight. In mild regions, fruit tree pruning can be carried farther both because the danger of sunscald is less and because, where there is more humidity, it is often advisable to open up the heads of the trees to insure circulation of air and admit plenty of light to the fruit.

The whole question of pruning to offset winter injury becomes unimportant in the South and on the Pacific Coast where only rarely does frost do any damage. However, experience in Florida with orange trees that have been frozen indicates the value of severe cutting back

as a means of reclaiming winter-killed orchards, just as, in the North, it is the accepted method of rejuvenating hedges and shrubs seriously injured by winter temperatures and drying winds.

In California, Hybrid Tea and other bedding roses are pruned in the same way and for the same reasons as in other parts of the country; but there it is the advent of a rainless season rather than a cold winter that brings on the dormant condition and makes the pruning possible. In southern regions of greater humidity, as along the Gulf, all types of roses, as well as other shrubs and vines, are grown with considerably less pruning than elsewhere.

A type of tree pruning peculiar to frost-free sections, especially Southern California, is the regular trimming of the dead lower leaves from the trunks of palm trees that line many of the streets and grace many home grounds. To many there is a certain striking beauty in the shaggy, yellowed ruffles that hang down below the green, plumy crowns, but they are considered a fire hazard in thickly settled communities and therefore are periodically hacked off and carried away by park employes, nurserymen, arborists and firms which, in local telephone directories, are listed as "tree-wreckers." However appropriate the term may be in that connection, it is the hope of this book that no one who reads it will ever deserve that title.